



“Extinguishing Systems Ltd.”



EPOTOS Group

**Condensed aerosol
Fire-extinguishing generators**



**TOR-1500
TOR-3000
TOR-6300**

User's Information & Installation Manual

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1. DESIGNATION

1.1. Condensed fire-extinguishing aerosol generators «TOR-1500», «TOR-3000» and «TOR-6300» (further as «CAG») with an aerosol bidirectional outflow and an ejector-typed arrangement and cooling of aerosol are designed for extinguishing in conditionally closed volumes fires and ignitions of the following Classes:

A2 — solid combustible materials ignition;

B — volatile flammable and combustible liquids ignition;

C — gases ignition

and fires of electrical equipment being under voltage of up to 140 kV.

1.2. CAG can operate in the ambient temperature range from -50°C to $+95^{\circ}\text{C}$ (it is permitted to rise repeatedly the ambient temperature up to $+125^{\circ}\text{C}$ for the duration of not more than 8 hours).

Predominant fields of application are engine compartments and other spaces of big dimensions on various transport means such as river and sea vessels, railway locomotives, cable vaults, electrical boxes and transformer plants, as well as rooms containing highly inflammable substances including volatile flammable liquids, combustible-lubricating materials and fuel gases and also storage rooms of valuable materials etc.

1.3. The generator belongs to class of fixed extinguishers having zero ozone depleting potential.

2. SUPPLIED PARTS

2.1. The delivery set includes:

GAG with mounting brackets - 1 pc,

Electrical actuator - 1 pc,

Cable part of a connector (due to a buyer's desire),

User's information & installation manual – 1 pc (It is permitted to attach one manual for a generators' lot of not more than 10 pc).

9. NOTICE of ACCEPTANCE

This notice certifies that the generators have left EPOTOS Group in full working order.

The TOR generators covered by this notice are listed here:

- Manufacturer's Serial Numbers:

- Goods were inspected and packed on:

- Inspector's stamp and signature

- perform welding works, smocking and use open flame on the distance nearer than 15 meters from a generator.

6. MAINTENANCE REQUIREMENTS

6.1. The TOR generators require no special maintenance beyond a regular visual inspection.

6.1.1 Once per a month each generator being in the standby state shall be examined for the absence of visual internal abnormalities of package contents and security of attachment, changes in attachment condition, mechanical damages, as well as for the absence of disconnection and internal abnormalities of the electrical actuator circuit.

Generators having troubles that can't be easily rectified should be checked by the manufacturer.

Attention! The electrical circuit should be checked for a current strength of less than 0,2 A.

7. STORAGE and TRANSPORTATION

7.1. The TOR generators should always be stored and transported in original packing. This will provide protection from mechanical damage, direct sunlight, moisture and aggressive environments.

7.2. The TOR generators can be transported by any transport at any distance in accordance with general existing rules of cargo transportation.

If they are to be transported by air they should be treated as dangerous goods of Class 4.1.

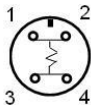
8. WARRANTY

8.1. The manufacturer guarantees the compliance of the generator to the requirements of Technical Specification, provided the conditions of transportation, storage and operation are strictly observed by users.

8.2. The specified lifetime of generators – 10 years if the storage time is not more than 8 years.

8.3. The generator warranty assurance – 2 years from the acceptance date of the generator (Q.A. Stamp).

3. BASIC TECHNICAL CHARACTERISTICS

Description	Values		
	TOR-1500	TOR-3000	TOR-6300
1	2	3	4
1. Mass of aerosol forming compound (AFC), kg	1.500±0.040	3.000±0.075	6.300±0.630
2. Extinguishing application density, g/m ³ (GOST R53284) -for fire class A2,C (not less) -for fire class B (not less)	45 60	45 60	45 60
3. Maximum protected volume, m ³	33.33	66.66	140
4. Action lag (time from the moment of sending impulse to a triggering element of the CAG to the moment of extinguishing ejecting), sec.	3	3	3
5. Discharge time, s (not exceed)	21±2	23±2	25±2
6. Overall dimensions, mm (not exceed): • length • diameter	285±10 232±5	320±10 293±5	386±10 377±5
7. Total mass of generator (including brackets), kg	7.320±0.300	12.000±0.500	23.600±2.360
8. Maximum temperature at the exit, °C	250	290	350
9. The length of aerosol gas current on which the following temperature is registered, m (not exceed): 200 °C 75 °C	0.3 1.85	0.4 1.9	1.4 4.00
10. Characteristics of electric actuation element: • current of guarantee actuation, A (not less) • resistance of fuse head, Ом • safe test current, A (not exceed)	0.7 1.5±0.3 0.2		
11. Connections in TOR electrical connector			

NOTE: The voltage at the output connectors of the electrical ignition device should be in range 1.5 ÷ 30.0 V.

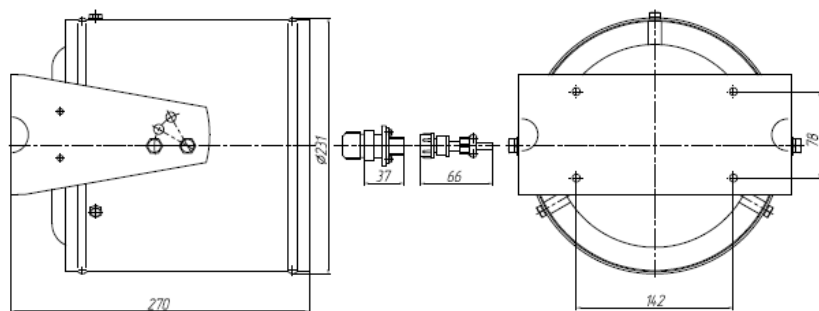


Fig.1. "TOR-1500" aerosol fire-extinguishing generator

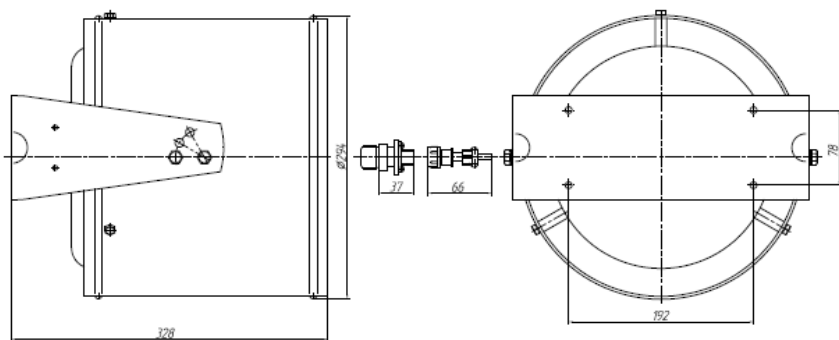


Fig.1. "TOR-3000" aerosol fire-extinguishing generator

4. DESIGN STRUCTURE, PRINCIPLE OF OPERATION

4.1. Design structure (fig.1, fig.2).

4.1.1. The generator consists of two-component steel containers. There are a charge of aerosol forming compound (AFC) and a coolant in the inner container of the generator.

4.1.2. Before connecting the generator to an electrical supply after its installation on an object extract a choke from the bore in the inner container and screw an electrical actuation device in to the bore. The joint packing is assured by a rubber ring which is collected to the set of the electrical actuation device.

The generator in on-position is mounted on the wall or on the ceiling of the protected object with the help of the bracket.

4.2. Operation principle of generator.

4.2.1. The generator will activate after receiving an appropriate electrical impulse on the electrical actuation device.

4.2.2. The actuation device after actuating initiates AFC charge burning.

4.2.3. During AFC charge burning generated gas (dispersed combustion products) flow through the coolant and further through an annular slot between the inner and outer parts of the generator's container into the protected volume and extinguish fires.

5. HEALTH AND SAFETY REQUIREMENTS

5.1. The generators are limited for use in the places of wide people presence (in the places of mass cultural actions or mass visiting).

5.2. During storage and maintenance of generators one should observe fire safety precautions like at use of combustion agents.

5.3. The personnel who may be expected to operate generators shall learn this manual and instructive notices printed on the container (label) and follow their requirements.

5.4. After the generator starts any people should not be in the zone of the aerosol gas current with the temperature more than 75 °C.

5.5. People can be in the space filled with fire extinguishing aerosol during 60 sec. and more only if they wear personal protection equipment for respiratory apparatus.

5.6. Particulate matter of fire extinguishing aerosol that accumulated on the open surfaces after the generator operation are taken away with the help of a vacuum cleaner, brush, wet cleaning rag or washed off by water. During cleaning one should wear personal protection equipment for respiratory apparatus (respirator or gauze bandage). In case of ingress of particles in eyes, wash them immediately in plenty of water.

5.7. It is not allowed to:

- place generators near heating devices (in the zone with the temperature of higher than 100°C);
- connect generators to an electrical supply prior their standard installation on an object;
- fulfill any works with a generator connected to a trigger circuit;